DOCUMENT RESUME

ED 474 088 IR 058 639

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TITLE	Requiring Students To Bring Computers to Campus: Are Universities Achieving their Goals?
PUB DATE	2001-00-00
NOTE	6p.; In: Proceedings of the International Academy for Information Management (IAIM) Annual Conference: International Conference on Informatics Education & Research (ICIER)(16th, New Orleans, LA, December 14-16, 2001); see IR 058 630.
AVAILABLE FROM	For full text: http://www.iaim.org.
PUB TYPE	Reports - Research (143) -- Speeches/Meeting Papers (150)
EDRS PRICE	EDRS Price MF01/PC01 Plus Postage.
DESCRIPTORS	Computer Uses in Education; *Computers; *Educational Objectives; Educational Planning; *Educational Policy; *Educational Practices; Higher Education; *School Surveys; *Technology Planning
IDENTIFIERS	Laptop Computers

ABSTRACT

According to data from the Campus Computing Project, an independent annual survey of colleges' information technology plans, less than 10 percent of colleges and universities currently require students to have their own computers. ("Growing Number of Colleges...," 2000) However, as universities fight to secure a competitive advantage for both themselves and their graduates in the 21st century, more institutions will be joining the ranks of those currently placing a desktop or a laptop in the hands of each co-ed. The goal of this paper is to poll the current thoughts of universities that do have such a requirement in place, of universities that are considering adopting a policy requiring computers in the near future, and of universities that have chosen not to jump on this band wagon. This paper explores the technology objectives of these universities and attempts to determine if these objectives are being met through universities' current computer ownership requirements. Includes two tables. The Technology Requirement Questionnaire is appended. (Contains 16 references.) (Author)

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ED 474 088

REQUIRING STUDENTS TO BRING COMPUTERS TO CAMPUS: ARE UNIVERSITIES ACHIEVING THEIR GOALS?

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ABSTRACT

According to data from the Campus Computing Project, an independent annual survey of colleges' information-technology plans, less than 10 percent of colleges and universities currently require students to have their own computers. ("Growing Number of Colleges...," 2000) However, as universities fight to secure a competitive advantage for both themselves and their graduates in the 21st century, more institutions will be joining the ranks of those currently placing a desktop or a laptop in the hands of each co-ed. The goal of this paper is to poll the current thoughts of universities that do have such a requirement in place, of universities that are considering adopting a policy requiring computers in the near future, and of universities that have chosen not to jump on this band wagon. This paper will explore the technology objectives of these universities and attempt to determine if these objectives are being met through universities' current computer ownership requirements.

INTRODUCTION

As the computer screen replaces the notebook, a growing number of universities, both private and public, are requiring that students either purchase or lease their own computers, adding at least $1000 per year to the average cost of college expenses (Port, 1999). For freshman at the University of North Carolina at Chapel Hill, the choice was whether or not to pay $2182 for a standard ThinkPad or $2924 for a model with expanded memory and a larger hard drive. On some campuses of the Polytechnic University in New York, students are paying $500 each semester to lease a laptop ("Growing Number of Colleges...," 2000).

Some schools are requiring the purchase of specific hardware and software. Others are supplying minimum computer configurations appropriate to different degree programs. (University of Florida: Student Computer Requirement's web site, 2001).

While the students may bear some of the financial burden, states are investing heavily to create a technology-enabled environment. In Massachusetts the Board of Higher Education approved a $123 million program that includes vouchers for low-income students and training, facilities, equipment, and academic programs ("Massachusetts Takes Step..., 2000). The plan unconditionally embraces technology at a time when educational specialists are still trying to ascertain how computer ownership impacts education. The Board of Higher Education deemed this to be a necessary step in ensuring graduates will have the technological skills to fill tens of thousands of business and high-tech job openings (Healy, 2000). However, this program has stalled for lack of funding and public support. The board had anticipated financing the program with state-issued bonds. The state IT division ruled against bond financing. Because computers rapidly become obsolete, monies will have to come out of general revenues. Events such as the evaporation of the state's surplus and the public's reaction to the cost have stalled the Board of Higher Education's plans (Olsen, 2001).

Benefits

All students will have the same academic advantage. Typically students who qualify for financial aid are less

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likely to have the means to purchase computers. If technology is a university requirement, the cost can be factored into financial aid packages. Some universities are using special endowments or have redirected some revenue monies to help students meet these costs ("Growing Number of Colleges...," 2000).

The network and communications that these computers provide can improve faculty/student communications. Skills acquired while using the computers would provide real skills which would make graduates more marketable (Graf, 2000). Software could be obtained at reduced prices with a campus site license (Gates, 1998).

Courses offered in all majors will be able to incorporate the use of technology (University of Denver: 2001 Laptop Specifications web site, 2001). On some campuses, freshman are required to attend training sessions so that they will be able to use and configure the computers and will be prepared for class work and/or assignments (Lawrence, 1999).

In the case of wireless LAN technology, students can access a course material or e-mail faculty while sitting on a bench outside the library. Many believe that the greatest benefit of requiring computers comes from outside the classroom, where students have 24-7 access to campus network and the Internet (Olsen, 2001) Technology has elbowed its way out of computer labs. Universities can reclaim scarce physical space that once housed these labs. No more spending of endless dollars to rewire old building with asbestos ceilings and cinder block walls to meet changing technology needs. At Wake Forest this year, freshman received a wireless Ethernet card with their PC notebook, and a bill with their tuition statement. Approximately 11 percent of Carnegie Mellon's students purchased wireless LAN cards with which to access the university's wireless network (Brewin and Cope, 2000).

Faced with stagnant enrollment and low SAT scores, Western Carolina University implemented a plan to wire campus and require computers in 1995. Students may choose to purchase a desktop or a laptop. While enrollment has not climbed, the quality of the student has. SAT scores are on the rise as WCU emphasizes communications skills and critical thinking, not computer hardware (Johnson, 2000).

While most administrators agree that they are unable to measure the real impact of computer ownership on education, this policy will impact the institution's bottom line. Spending on information technology can be greatly reduced for the institution as these costs are passed on to the student (Olsen, 2001).

Concerns

Not everyone agrees that student ownership of computers is necessary. Everyone does agree that networks must be improved to accommodate increased traffic, the student's cost of education will rise, and both faculty and students will need additional training (Graf, 2000).

Security and battery life require thought and planning for universities that wish to embrace wireless technology (Brewin and Cope, 2000). Some faculty also worry about the integrity of using high-tech electronic devices in the classroom (Kobin, 2000).

Others are concerned about the added financial burden to students (Port, 1999). Chris Duckenfield, vice provost for computing and information technology at Clemson University, believes that it is unfair to require students to spend money on technology that will be obsolete in two years. In 33 labs across campus, Clemson has 800 computers available that can be configured to suit the user. Students do not have to invest in their own machine, they do not have to lug machines around, and equipment cannot be stolen ("Clemson Develops System," 1998).

Students at some universities that require computer ownership have been disappointed. The computer requirement brought with it the expectation that computers would be used in some, if not all, classes. In fact, few classes are computer intensive. Restructuring courses takes commitment and time for faculty members to create course content that is electronic (Olsen, 2001).

RESEARCH QUESTIONS

One goal of this paper was to survey universities with computer requirements and determine what their objectives were when these universities decided to embrace a technology requirement. The survey instrument then asked if these objectives are being met, and if not, why not. The instrument also asked the universities if they were experiencing any unexpected outcomes, good or bad, and if so what these outcomes are (i.e., change in enrollment or retention, etc.).

Another goal of this paper was to poll universities who have not begun requiring students to arrive on campus with computers in tow. Are they considering imposing a technology requirement? If so, what are the driving forces behind this decision? If not, why not?

A driver behind this project was the strategic planning process currently underway at the authors' university. The information technology plan task force has directed the university to consider requiring students to purchase/lease laptop computers. This requirement would supplement or replace the current environment which makes 1400 computers at various locations on campus available for student use almost continuously during academic sessions. In addition, most student residence halls are wired for connection to the campus LAN. Plans are underway to make older residence halls "connected" via wireless technology.

METHODOLOGY

Although the authors are primarily interested in the computer ownership requirements at peer institutions, we decided to use the *Chronicle of Higher Education* listing of colleges/universities as our frame ("How the Classification...", 2000). A stratified random sample of 20 percent of the frame was selected from doctoral-granting institutions (total of 151 extensive, 110 intensive), master's colleges and universities (total of 496 at level I, 115 at level II), and baccalaureate colleges (total of 228 liberal arts, 321 general, and 57 baccalaureate/associate). The provost/academic vice president at each selected institution was contacted via e-mail with a link to a web-based survey. If electronic contact could not be made, a letter was sent with an enclosed hard copy version of the survey. A follow-up contact was made via e-mail/mail approximately two weeks after the initial contact.

RESULTS

Forty-one private institutions and 59 public institutions responded to the survey. These 100 responses out of the 295 surveyed renders a response rate of 33.9 percent. Of these 100 colleges and universities, 23 are doctoral-granting institutions, 39 are master's colleges and universities, and 38 are baccalaureate colleges. Most (62 percent) were institutions of 5000 students or less. Table 1 shows the breakdown of respondents by size of student body.

TABLE 1

Size of Student Body	Frequency
less than 5000	62
5000 - 10,000	19
10,001 - 19,999	9
20,000 - 30,000	5
over 30,000	5

Thirteen of the 100 institutions that completed the survey instrument required students to own or lease their own computers. Of those requiring all students to have their own computers, 64 percent make this requirement for students in every degree program. The remainder of those surveyed have this requirement in place for only some of their programs.

One-third allow students to lease computer equipment, 40 percent require that students purchase computer equipment. The remainder of institutions which require students to have computers leave the decision to buy versus lease up to the students. Two-thirds of these schools specify that the computer must be a laptop computer.

Roughly 62 percent of those mandating students must have their own computers have had this requirement in place for 2 to 3 years. Eighty-three percent believed this endeavor has been successful. None of the institutions considered the mandate to not be successful.

Of those not currently requiring computer ownership by students, most were not considering changing this policy in the near future. For a breakdown of responses, see Table 2.

Chi-square goodness of fit tests were conducted for those institutions which have computer requirements in place to allow a comparison by institution (private versus public), type (doctorate-granting institutions, master's colleges and universities, baccalaureate colleges), and size of student body. Only one of these tests yielded a difference that can be considered to be significant. Fifty-six percent of those schools with a student body between 10,001 and 19,999 require students to come to

campus with computers. All other categories of schools based on size of student body had fewer than 12 percent of responding institutions mandating that students must own or lease a computer ($p = .002$).

Table 2

Future Plans	Percent
Currently planning to implement computer requirement	3.6 %
Currently considering to implement computer requirement	27.4
Not considering such a requirement	69.0

CONCLUSIONS

This study did not culminate in any definitive results. It did provide us with some initial information concerning the percentage of institutions that are mandating students arrive with computers and some insight into the successes, failures, concerns, and limitations of these programs.

In our survey instrument we asked for a contact person at the university who would be willing to talk with us and provide a clearer picture of what is happening at the institution. Our next step in this research will be to contact these people and discuss their decision whether or not to mandate that students have computers and the reason(s) their institution made this decision. For those who chose to require computers, we would like to know the goal of their program and whether or not it is being achieved.

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APPENDIX
TECHNOLOGY REQUIREMENT QUESTIONNAIRE

DEMOGRAPHICS

1. Your institution is:
   41% Public
   59% Private

2. Type of university/college:
   23% Doctorate-Granting Institution
   39% Master's Colleges and Universities
   38% Baccalaureate Colleges

3. Size of Student Body:
   62% Less than 5,000
   19% 5,000 - 10,000
   9% 10,001 - 19,999
   5% 20,000 - 30,000
   5% More than 30,000

COMPUTER REQUIREMENT

1. Does your institution require students to own/lease their own computers?
   12.9% Yes (Please answer questions 2 - 6.)
   87.1% No (Please skip to question 7)

2. Are all students required to have their own computers or only students in some specific programs?
   64.3% All
   35.7% Some

3. Computer equipment for students is:
   33.3% Leased
   40.0% Purchased
   26.7% Either

4. Students are required to own/lease the following:
   66.7% Laptop
   0.0% Desktop
   33.3% Either

5. Your institution's computer requirement has been in place for:
   23.1% Less than 1 year
   61.5% Two to three years
   15.4% Four to five years
   0.0% more than 5 years

6. In your opinion, considering what your institution hoped to achieve by requiring students to have their own computers and the actual results being experienced, this endeavor has been:
   58.3% Very Successful
   25.0% Successful
   16.7% Neither successful nor unsuccessful
   0.0% Unsuccessful
   0.0% Very Unsuccessful

Now please skip to question 8

7. Although computers are **not** currently required at your institution, such a requirement is:
   3.6% Currently being planned
   27.4% Currently being considered
   69.0% Not being considered

8. Would you be willing to share details/opinions of the computer requirement currently enforced at your institution?
   ☐ Yes
      ☐ Via telephone
      Number: _____
      Best time of day: _____
      ☐ Via e-mail
      E-mail address: _____

   ☐ Not at this time

THANK YOU FOR YOUR INPUT. IF YOU WOULD LIKE A COPY OF THE RESULTS, PLEASE E-MAIL US AT crandall@gasou.edu.

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